CLAIMS:

1. A magnetic resonance imaging system, comprising at least:

a) a main magnet system (2) for generating a steady magnetic field in a measuring space of the magnetic resonance imaging system,

b) a gradient system (3) for generating a magnetic gradient field in said measuring space, said gradient system comprising primary coil-like elements and shield coil-like elements, said shield coil-like elements being designed to provide force compensation for the primary coil-like elements thereby minimizing, preferably eliminating, mechanical vibrations and/or noise inside the gradient system,

c) an eddy current shield system (13) positioned between said main magnet system and said gradient system, said eddy current shield system being mechanically decoupled from the main magnet system (2) and/or the gradient system (3).

2. A magnetic resonance imaging system according to claim 1, characterized in that the eddy current shield system (13) is positioned within a space (14) between said main magnet system (2) and said gradient system (3), said space (14) being closed.

3. A magnetic resonance imaging system according to claim 2, characterized in that the eddy current shield system (13) is positioned within a closed vacuum space.

4. A magnetic resonance imaging system according to claim 1, characterized in that the eddy current shield system (13) consists of at least one active element or at least one passive element or a combination of at least one active and at least one passive element.

5. A magnetic resonance imaging system according to claim 4, characterized in that the eddy current shield system (13) comprises a set of active elements, namely a set of additional shield coil-like elements.

6. A magnetic resonance imaging system according to claim 5, characterized in that the eddy current shield system (13) comprises a set of three orthogonal shield coils (15, 16, 17).

7. A magnetic resonance imaging system according to claim 4, characterized in that the eddy current shield system (13) comprises at least one passive element designed as a conductive tube (21; 23, 24).

8. A magnetic resonance imaging system according to claim 4, characterized in that the eddy current shield system comprises a set of shield coil-like elements in combination with at least one conductive tube.

9. A magnetic resonance imaging system according to claim 1, characterized in that the eddy current shield system (13) comprises a support structure, wherein the support structure is connected to and mechanically decoupled from the main magnet system (2) and/or the gradient system (3).

10. A magnetic resonance imaging system according to claim 9, characterized in that the support structure is connected to and mechanically decoupled from the main magnet system (2) and/or the gradient system (3) by decoupling means.

11. A magnetic resonance imaging system according to claim 10, characterized in that the decoupling means are designed as passive means taking the form of strips or blocks or rubber-like material and/or as active means such as piezo means.

12. A magnetic resonance imaging system according to claim 1, characterized in that the eddy current shield system (13) is designed as a constrained layer structure and/or as a perforated structure.

13. A magnetic resonance imaging system according to claim 12, characterized in that the eddy current shield system (13) comprises a set of shield coil-like elements (15, 16, 18) positioned on at least one carrier tube (18, 19), wherein the coil-like elements (15, 16, 17) and the or each carrier tube (18, 19) are attached together providing a constrained layer structure.

14. A magnetic resonance imaging system according to claim 13, characterized by two carrier tubes (18, 19), wherein a visco-elastic layer (20) is positioned between the two carrier tubes (18, 19), and wherein the set of shield coil-like elements (15, 16, 17) are attached to the outer carrier tube (19).

15. A magnetic resonance imaging system according to claim 12, characterized in that the eddy current shield system (13) comprises at least one conductive tube (21; 23, 24), wherein the or each conductive tube (21; 23, 24) comprises holes (22) directed in radial direction providing a perforated structure.

16. A magnetic resonance imaging system according to claim 15, characterized by at least two conductive tubes (23, 24) with a visco-elastic layer (25) positioned between the at least two conductive tubes (22, 23) and with holes (22) directed in radial direction providing a perforated and constrained layer structure.